

Memorandum
March 15, 1985

To: Mark S. Coleman, Deputy Commissioner
for Environmental Health Services

Thru: Dale McHard, Chief *DM*
Radiation and Special Hazards Service

From: Robert L. Craig, Director *RLC*
Radiation Protection Division

Subject: Project Summary, Sooner Dial Company Site, Clinton

On January 24, 1985 a cursory survey of the site was made by Truby and Smith and two samples of soil were taken. Radiation levels were measured but were not recorded. The gamma ray levels ranged from 10,000 cpm on the Ludlum 1 X 1 inch NaI scintillation detector (about 0.01 mR/hr.) to 20 mR/hr as measured with a GM type survey instrument. The concentration of radium in the soil samples was 1130 and 1040 pCi/gm.

On the basis of these results, the owner (Mr. Ron Grubbs) was contacted and informed that there was radium contamination on the property.

On February 11, 1985 a more detailed survey of the property was made by Craig and Thiesson (Custer County Sanitarian). At this time, a grid was established on the property and external gamma ray measurements were made and recorded at ground level and three feet above the ground. The grid was about 30 feet on each side (900 sq. ft. for each grid section). Samples were collected at three locations on the property. Samples were taken at two inch intervals from the ground surface to the underlying sandstone. The warehouse was also surveyed for external radiation levels and for alpha radioactivity contamination.

The gamma ray levels in the warehouse were found to be at background levels (10,000 cpm on the NaI detector).

A swipe sample of the floor of the warehouse indicated that there was no removable alpha contamination. Direct survey of the floor indicated levels of fixed contamination ranging from 1300 to 2600 dpm per 100 square centimeters.

9527505



Analysis of the soil samples showed the following results:

<u>Date Sampled</u>	<u>Location*</u>	<u>Depth Below Ground Surface</u>	<u>Radium (pCi/gm)</u>
24 Jan 85	X	Surface	1,130
24 Jan 85	X	Surface	1,140
11 Feb 85	1-A	0 to 2 in.	2,130
	1-B	2 to 4 in.	580
	1-C	4 to 6 in.	810
11 Feb 85	2-A	0 to 2 in.	150
	2-B	2 to 4 in.	880
11 Feb 85	3-A	0 to 2 in.	130
	3-B	2 to 4 in.	210
	3-C	4 to 6 in.	200

*See sketch

The gamma ray measurements shown on the sketch and the concentrations shown above indicate the presence of widely spread, non-uniform contamination on the site. There are several spots where the external radiation levels indicate high levels of contamination in the soil and two hot spots under the concrete apron at the rear of the warehouse. These are also indications that there may be contamination of the soil across the alley from the site.

Analysis of one of the samples collected on January 24, 1985 indicates that less than 0.5 percent of the radium is soluble.

Some rubble had been removed from the site and hauled to a site inside the city limits of Clinton to be used as construction fill. Thiesson knows the location of this site. The site is owned by Ray Wickert, Inc., 1401 Industrial Road, Clinton, Oklahoma. The site is reported to be 2 or 3 acres in area and the fill is 6 to 8 feet deep.

There is contamination on the floor of the warehouse which is minimal. The levels are in the range which require remedial action.

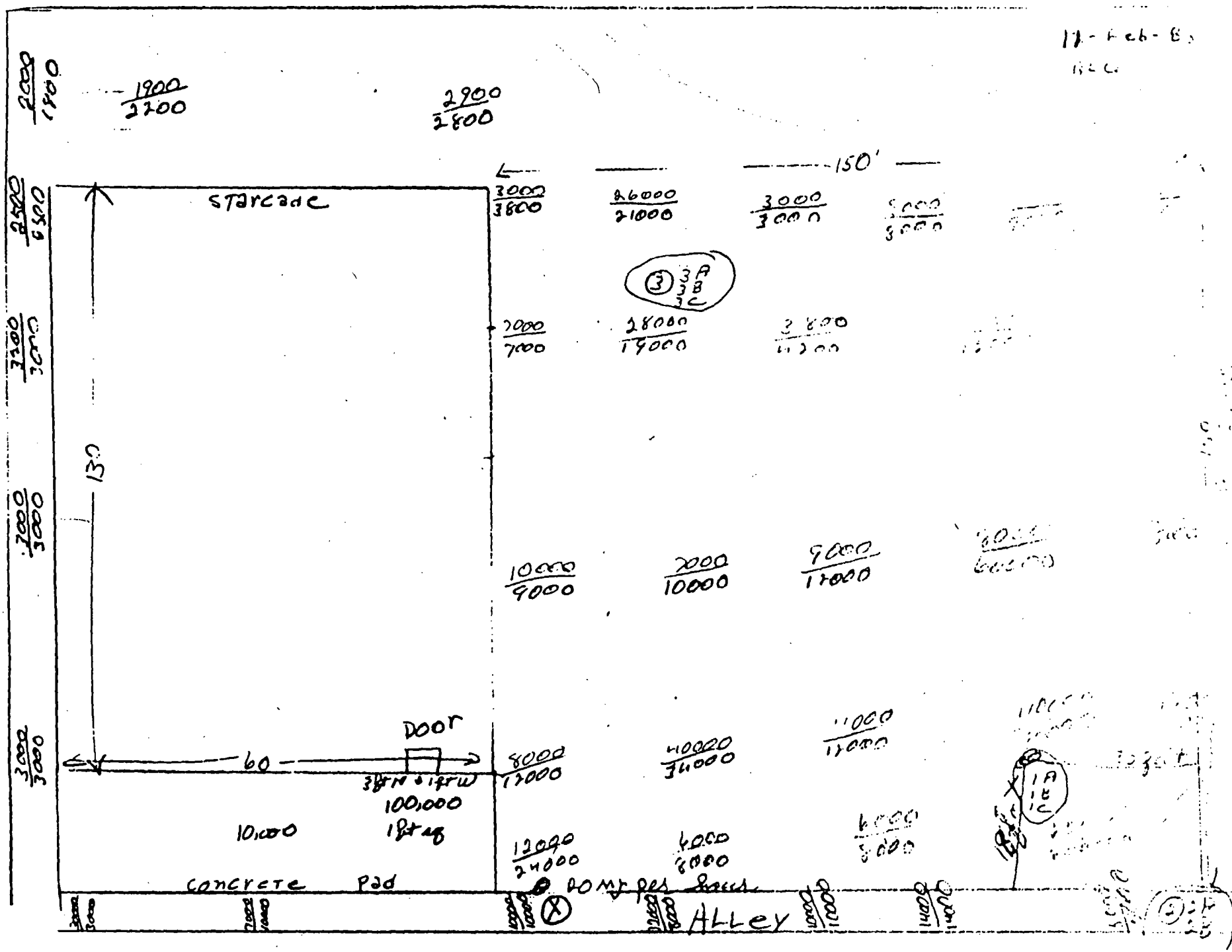
Present knowledge indicates that there is uncontrolled radium contamination in the soil on the site in concentrations which require removal. A preliminary estimate indicates that the cost of removal may exceed \$500,000. There is a good possibility that this cost may be reduced significantly if more detailed survey and analysis information were available. Since the radium is only very slightly soluble, there should not be any significant contamination of either ground or surface water. The degree of hazard to the public from this site is small and while the contamination must be removed, care must be exercised in the design of the remedial action plan.

10' STREET

Donner Deal Co. SD

17-Feb-83
B.L.C.

STREET



0000
0000
0000
0000
0000
0000
0000
0000